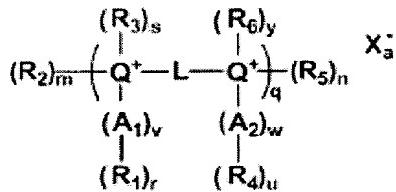


ABSTRACT

Disclosed are compounds capable of facilitating transport of biologically active agents or substances into cells having the general structure:



5 wherein

Q is selected from the group consisting of N, O and S; L is any bivalent organic radical capable of linking each Q, such as C, CH, $(\text{CH}_2)_l$, or $\{(\text{CH}_2)^i - \text{Y} - (\text{CH}_2)^j\}^k$, wherein Y is selected from the group consisting of CH_2 , an ether, a polyether, an amide, a polyamide, an ester, a sulfide, a urea, a thiourea, a guanidyl, a carbamoyl, a carbonate, a phosphate, a sulfate, a sulfoxide, an imine, a carbonyl, and a secondary amino group and wherein Y is optionally substituted by $-\text{X}_1-\text{L}'-\text{X}_2-\text{Z}$ or $-\text{Z}$; R_1-R_6 , independently of one another, are selected from the group consisting of H, $-(\text{CH}_2)^p\text{-D-Z}$, an alkyl, an alkenyl, an aryl, and an alkyl or alkyl ether optionally substituted by one or more of an alcohol, an aminoalcohol, an amine, an amide, an ether, a polyether, a polyamide, an ester, a mercaptan, an alkylthio, a urea, a thiourea, a guanidyl, or a carbamoyl group, and wherein at least one of R_1 , R_3 , R_4 and R_6 is a straight chain or branched, cyclic, alkyl, alkenyl, alkynyl or aryl group; and anyone of R_1 , R_3 , R_4 and/or R_6 may optionally be covalently linked with each other, with Y or with L when L is C or CH to form a cyclic moiety; Z is selected from the group consisting of amine, spermiyl, carboxyspermiyl, guanidyl, spermidinyl, putricinyl, diaminoalkyl, pyridyl, piperidinyl, pyrrolidinyl, polyamine, amino acid, peptide, and protein; X_1 and X_2 , independently of one another, are selected from the group consisting of NH, O, S, alkylene, and arylene; L' is selected from the group consisting of alkylene, alkenylene, alkynylene, arylene, alkylene ether, and polyether; D is Q or a bond; A_1 and A_2 , independently of one another, are selected from the group consisting of CH_2O , CH_2S , CH_2NH , C(O) , $\text{C}\{\text{NH}\}$, C(S) and $(\text{CH}_2)^t$; X is a physiologically acceptable anion; m, n, r, s, u, v, w and y are 0 or 1, with the proviso that when both m and n are 0 at least one of r, s, u and y is other than 0; i, j, k, l, p and q are integers from 0 to about 100; q is an integer from 1 to about 1000; and a is the number of positive charge divided by the valence of the anion.